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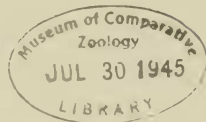
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Notes on the Family Cardiidae

80,304

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While studying the family Cardiidae, for a *Johnsonia* number on the Western Atlantic species, some notes were made regarding several species from other oceans. They seem sufficiently important to warrant publication.

Fulvia bullata Linné

Solen bullatus Linné 1758, *Systema Naturae*, ed. 10, p. 673 (locality unknown) refers to Rumphius 1741, *D'Amboinsche Rariteitkamer*, pl. 44, fig. N.; Linné 1767, *Systema Naturae*, ed. 12, p. 1115; Gmelin 1790, *Systema Naturae*, ed. 13, p. 3226.

Cardium virgineum Linné 1758, *Systema Naturae*, ed. 10, p. 682 (Mediterranean Sea); *ibid.* 1767, ed. 12, p. 1124; Gmelin 1790, *Systema Naturae*, ed. 13, p. 3253 refers to Gronovius 1781, *Zoophylacium Gronovianum*, **3**, pl. 18, fig. 5 (Mediterranean Sea). Variety β refers to Chemnitz 1782, *Conchylien-Cabinet* (1) **6**, pl. 18, fig. 181 (Indian and American Oceans).

Cardium apertum Bruguière 1789, *Encyclopédie Méthodique*, p. 226 (Asiatic and American Oceans) refers to Gronovius 1781, *Zoophylacium Gronovianum*, **3**, pl. 18, fig. 5, and to Chemnitz (1) **6**, pl. 18, figs. 181-183.

Cardium hians Spengler 1799, *Skrifter af Naturhistorie Selskabet*, Copenhagen, **5**, p. 39, refers to Chemnitz (1) **6**, pl. 18, fig. 181, 183.

Cardium rugatum Dillwyn 1817, *Descriptive Catalogue of Recent Shells*, p. 125 (Coast of Jamaica and the East Indies) refers to Gronovius 1781, *Zoophylacium Gronovianum* **3**, pl. 18, fig. 5.

Cardium tenerum 'Solander' Dillwyn 1817, *Descriptive Catalogue of Recent Shells*, p. 125 (no locality given).

This species, *Fulvia bullata* Linné, was based upon a figure in Rumphius' work. There can be no doubt that this figure corresponds to shells from Australia and the East Indies which

are in the collection of the Museum of Comparative Zoölogy. Many early authors mistook the figure for that of *Papyridea hiatus* Meuschen which is a Western Atlantic species.

***Fulvia tenuicostata* Lamarck**

Cardium tenuicostatum Lamarck 1819, Histoire Naturelle des Animaux sans Vertèbres, **6**, p. 5 (Timor and New Holland); Delessert 1841, Recueil de Coquilles Décrites par Lamarck, pl. 11, figs. 6 a, b, c.

Cardium ricketii Donovan 1825, Naturalists' Repository, **4**, pl. 124 (New South Wales).

Cardium radiatum Reeve 1843, Conchologia Iconica, **2**, **Cardium**, pl. 18, fig. 89 (locality unknown); *non radiatum* 'Donovan' Gray 1824; *non radiatum* Dujardin 1837.

Cardium pallidum Reeve 1843, Conchologia Iconica, **2**, **Cardium**, pl. 18, fig. 92 (Manila Bay, Philippine Islands).

Cardium ricketii 'Donovan,' Hedley 1916, Proceedings Linnean Society of New South Wales, **41**, p. 685.

In 1916, C. Hedley published an article in which he suggested that the real *C. tenuicostatum* Lamarck had been "lost to view" and that the later Australian references should be transferred to *C. ricketii* Donovan. We cannot accept these suggestions, since we find shells from Australia that agree with Lamarck's type figure in Delessert. Hedley pointed out that Lamarck had described a specimen measuring 56 mm. in height. Our largest specimen reaches 51 mm. It is possible that there was a misprint in this particular, as the remainder of the description agrees with the shell in question. Hedley also mentioned that his shell had 49 ribs, while the Lamarckian species had but 48. Such close differentiation does not hold in the family Cardiidae, where there is often a variation of 3-4 ribs. Reeve reported that there was a variation of from 40-52 in the rib count of *C. tenuicostatum* Lamarck. We suggest that the name *Fulvia tenuicostata* Lamarck be retained for this Australian species.

***Acanthocardia spinosa* Solander**

Cardium spinosum Solander 1786, Catalogue of the Portland Museum, p. 105, lot no. 2297 refers to Favanne, La Conchyliologie ou Histoire Naturelle des Coquilles de Mer, d'Eau Douce, Terrestres et Fossiles par M. Desallier d'Argenville, Troisième édition, par Mm. de Favanne de Montcervelle 1780, **1**, pl. 52, A2. (Mediterranean).

Cardium erinaceum Lamarck 1819, Histoire Naturelle des Animaux sans Vertèbres, **6**, p. 8 (Mediterranean) refers to exactly the same plate and figure as that given by Solander.

The earlier name of Solander is valid for this Eastern Atlantic species of *Acanthocardia*.

***Cardium indicum* Lamarck**

Cardium hians Brocchi 1814, Conchiologia Fossile Subapennina, p. 508 (Middle Pliocene, Asti, Italy) *non Cardium hians* Spengler 1799.

Cardium indicum Lamarck 1819, Histoire Naturelles des Animaux sans Vertèbres, **6**, p. 4 (Indian Ocean).

Cardium darwini Mayer 1866, Journal de Conchyliologie, **14**, p. 69 (upper Tertiary of Algeria).

It is unfortunate that we must discard the well known name of *Cardium hians* Brocchi due to a prior use by Spengler. Lamarck described *Cardium indicum* as the "recent analogue" of Brocchi's *C. hians*, which had been described from fossil material. We consider the two to be synonymous thus enabling the use of Lamarck's name.

***Lophocardium cumingii* Broderip**

Cardium cumingii Broderip 1833, Proceedings of the Zoölogical Society, London, p. 82, 83; Reeve 1843, Conchologia Iconica, **2**, **Cardium**, pl. 12, fig. 59 (Gulf of Dulce, Costa Rica, Central America, in 12 fathoms).

Protocardia (Lophocardium) cumingii "Sowerby" Smith 1944, Panamic Marine Shells, Winter Park, Florida, p. 58 [*Protocardia comingi*, fig. 738 error in reference to figure].

The original and unique specimen of *Lophocardium cumingii* Broderip was collected by Hugh Cuming and is in the British Museum. Recently, through the courtesy of John Armstrong of the American Museum of Natural History, we have been privileged to study specimens of this shell dredged by the *Asko* in 1941. They were taken at a depth of 17-21 fathoms in Ardita Bay, Colombia.

This is a very rare and beautiful shell, about 25-30 mm. in length, inflated and gaping. We can add little to the enthusiastic description of Broderip, who said, "This beautiful bivalve, rosy, transparent and exquisitely wrought, was found by Mr. Cuming whose name it bears." It is fragile and delicate, rose-pink and iridescent. There are many fine radiating ribs, approximately 200, crossed by faint, irregular lamellae which become slightly more developed and more widely spaced on the anterior slope. There is an unique vertical ridge, made of

periostracal material which is formed in elaborate loops and gives a crest-like appearance. This rib separates the posterior sculpture from that of the anterior slope of the shell. It is not made of shelly material as in the case of *Mactra alata* Spengler. Because of this vertical ridge, Fischer (1887, Manuel de Conchyliologie, p. 1038) allocated *C. cumingii* to a section which he named *Lophocardium* and placed in the subgenus *Papyridea* Swainson. Fischer's description is brief and he differentiates the shell section on only the basis of the "vertical ridge with a prominent wing-like" shape. There are species of the genus *Fulvia* that have looped periostracum; there is also a species of the genus *Microcardium* having a vertical ridge made up of periostracum and separating the posterior sculpture from that of the anterior slope. There is another, more significant basis for differentiation, however. This is the fact that *Lophocardium* has no anterior lateral teeth. The cardinal teeth are well developed, the posterior are long and narrow, but there is no trace of the anterior laterals. Because of this unusual hinge character and the differences in the sculpture already mentioned, *Lophocardium* should, we believe, take its place as a full genus.

There are two species of the genus *Lophocardium* which have been dredged in the same general locality, *L. cumingii* Broderip and *L. annettae* Dall. The latter was reported in 1889 (Nautilus 3, p. 14; Report of the *Albatross* Mollusca, Proceedings of the United States National Museum, 1889, 12, pp. 264-266, pl. 10, fig. 4) from the Coast of Lower California near Cerros Island, Mexico. *Lophocardium annettae* Dall is slightly higher, not so elongate posteriorly and is more inflated than *L. cumingii* Broderip. It is less fragile and less highly colored, having only a pinkish tinge. The outstanding difference, however, is the arrangement of the periostracum on the posterior slope, which is in a very definite pattern of from five to seven concentric ridges, running parallel to the growth lines.